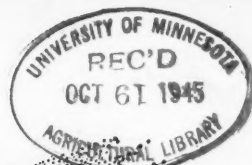


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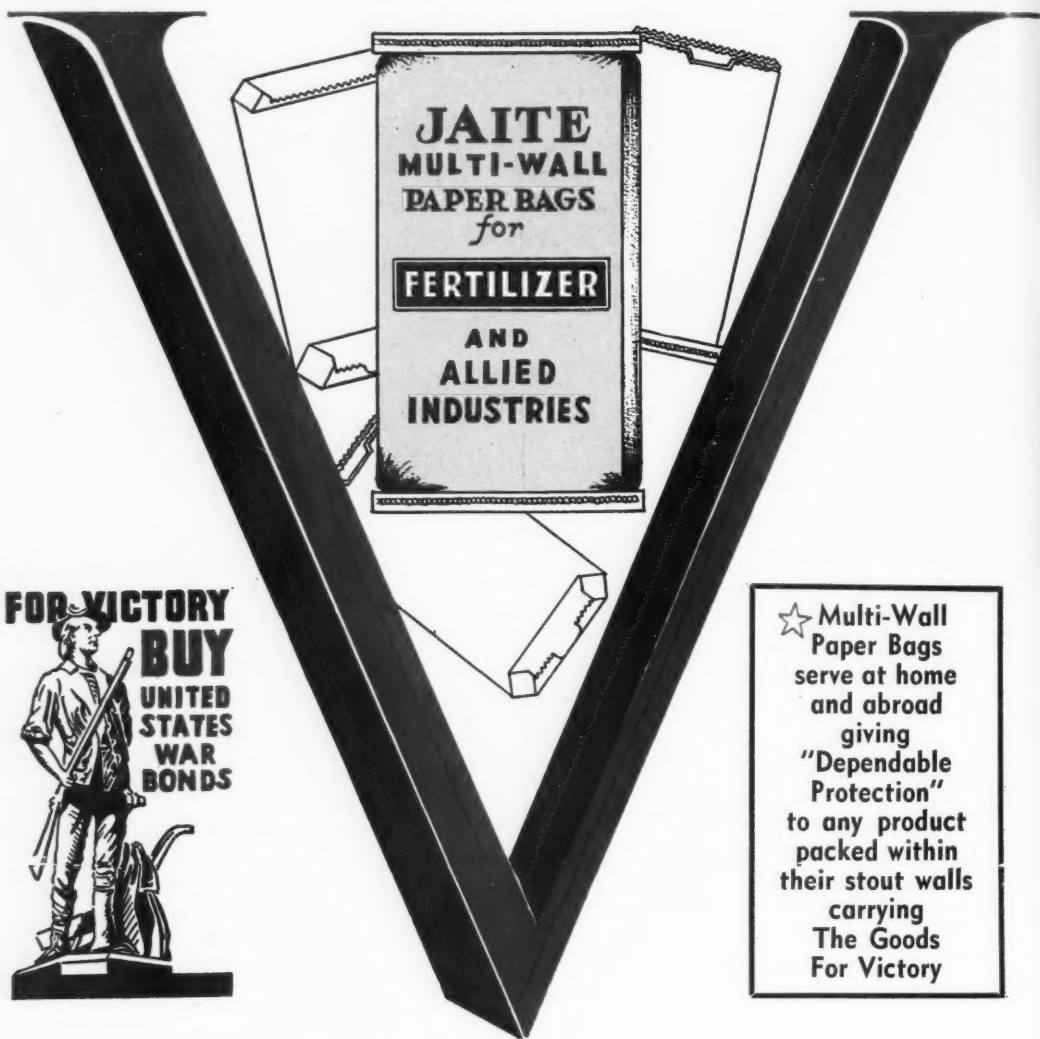
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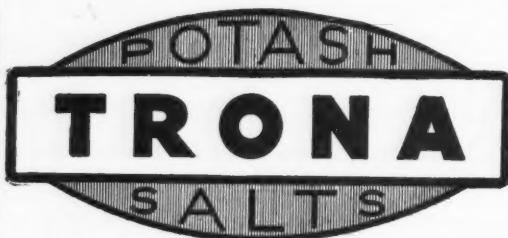
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See page 29



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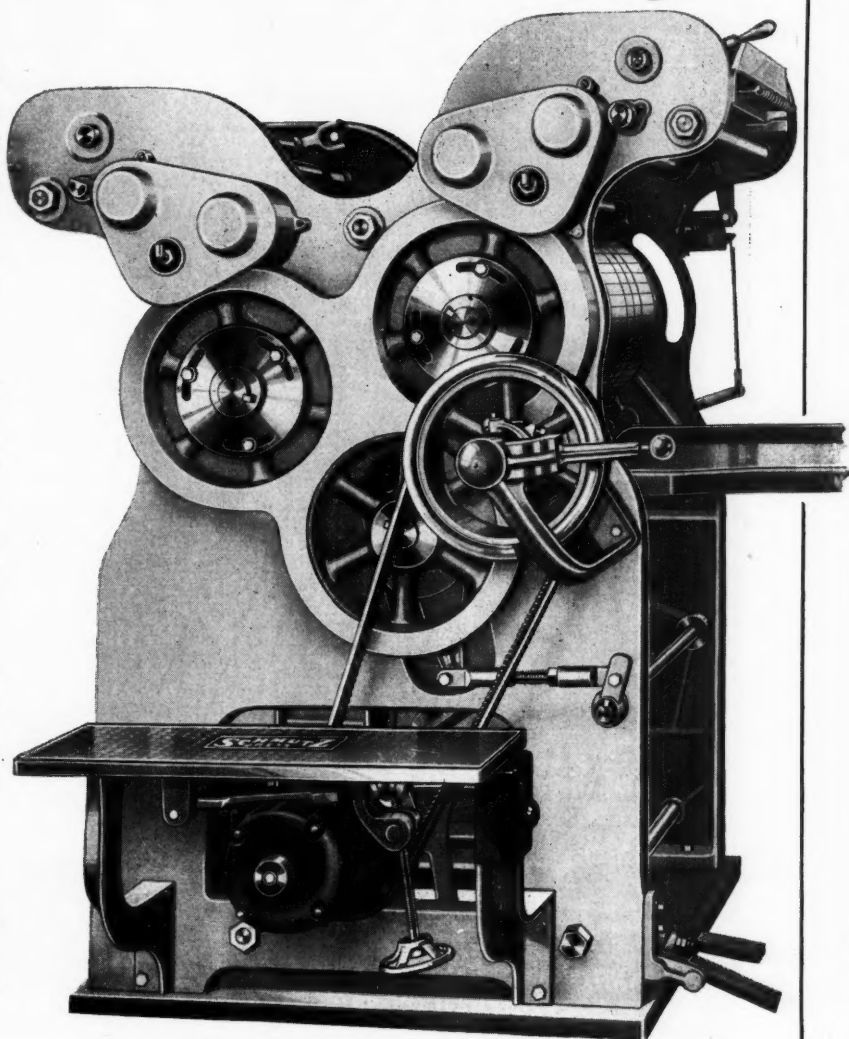
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"That man is a benefactor to his race who makes two blades of grass to grow where but one grew before."

Vol. 103

OCTOBER 6, 1945

No. 7

Future Developements in the Production and Use of Fertilizers in Great Britain*

By E. M. CROWTHER

Head of Chemistry Department, Rothamsted Experimental Station, Harpenden, England

AS THE general postwar pattern of British agriculture has not yet been determined, it is too early to formulate any long-term policy in the production and use of fertilizers, but some general directions of future progress are fairly clear. Even though there have sometimes been irritating local shortages of fertilizers, it would be wrong to conclude that the soils of the country have been exhausted of plant foods during the war, and that the general level of soil fertility has fallen. Some fields have certainly become plough-stale and weedy through growing cereals too frequently, and these should soon go down to leys to restore their structure and reserves of organic matter. Phosphate is needed for much of the permanent grass, especially for dairy cows and young stock, and many soils are short of potash. These pressing requirements are, however, small by comparison with the over-all improvements in productivity and soil fertility resulting from improved cropping, draining, liming and manuring. Judging the whole country as a single estate or farm, any valuer would be bound to conclude that it was a far more prosperous and improving concern than in the prewar days of depression. Unfortunately he could not at present have all the figures for amounts of purchased feeding stuffs and fertilizers to assess tenant right valuation for manurial residues, but, even if it should turn out that the total plant food

brought on to farms in fertilizers and feeding stuffs was less than before the war, he would be compelled to recognize that it was now being used far more efficiently.

Soil Testing

Apart from developments through fundamental research and new discoveries, it is possible to foresee some of the main directions in which technical investigations will proceed. The first task will be to obtain more knowledge of individual soils, crops, manures and systems of husbandry by surveys and field experiments. Generalizations can then be made for much more closely defined local conditions. Any one method of soil analysis must be expected to break down on widely contrasted soils in regions with quite different climates and systems of husbandry, but modified methods can be adapted for various local conditions, once a sufficient number of field experiments has been conducted and the soils classified and mapped. Field experiments are the vital link between farming and research. Long-term investigations on the cumulative and residual effects of different systems of cropping and manuring must be laid down at permanent experiment centers representing various agricultural systems, and large numbers of short-term field experiments in carefully coordinated series must be conducted on ordinary commercial farms.

Concentrated Fertilizers

The general trend in manuring is clearly towards more frequent small applications of concentrated materials by improved machines.

*Reprinted from a pamphlet entitled *Fertilizers During the War and After*, published by the Bath and West and Southern Counties Society, Bath, England.

Some day it may become possible to prepare slowly acting forms of synthetic nitrogen fertilizers to supplement the dwindling supplies of concentrated organic nitrogen fertilizers and the manurial residues from imported feeding stuffs. It seems unlikely that this country will be able to afford large imports of these materials, or that the poor soils of India, Africa and South America can be indefinitely "mined" to enrich our soils. These countries will need to process their farm products, so as to retain as much protein and other nutrients for their own people, stock and land, and to export mainly oils, fibers and starchy foods, which carry away only elements derived from the atmosphere.

New Phosphate Fertilizers

Even greater developments may be expected in the production of phosphate fertilizers. Until the last decade or so superphosphate had no serious competitor except the by-product basic slag, but entirely novel methods are already in operation for producing alternative soluble fertilizers from phosphate rock. Some of these processes start by preparing elementary phosphorus, which is then burnt and used to make either triple superphosphate or a new product "calcium metaphosphate" with the equivalent of over 60 per cent phosphoric acid. This material acts very slowly but has given excellent results in America for establishing cover crops and leys. Other methods are still on the semi-technical scale. At sufficiently high temperatures, rock phosphate can be broken up to remove fluorine and leave a true tricalcium phosphate, which proves to be readily available to crops, even though it is not water-soluble. Much work is being undertaken to see whether there is any advantage in mixing superphosphate with various basic materials, e. g., lime, basic slag, or serpentine (a natural magnesium silicate), to produce a phosphate available to crops but less quickly inactivate in the soil.

It is too early yet to assess the immediate prospects of these newer materials, but one point at least is clear. In Great Britain we suffer an unnecessary restriction by requiring our superphosphate and compound fertilizers to be valued in terms of their water-soluble phosphoric acid. In the early days of the industry water solubility served to distinguish poorly made samples, but the industry is now so efficient that this test has outlived its usefulness. It has even become an obstacle to progress because many of the new products have little water-soluble phos-

phate even though they are just as readily available to crops. In the United States, France and a few other countries, an alternative test is based on extracting with ammonium citrate solution. Some other test than water-solubility must soon be introduced into our Fertilizers and Feeding Stuff Act Regulations, in order that full advantage may be taken of current and future research.

The problems involved in investigating new methods of making available phosphates are so complicated and the technical resources required so elaborate, that they have been attacked systematically only by large chemical corporations, the U. S. Department of Agriculture and the Tennessee Valley Authority. These last two organizations have done most of the outstanding fundamental research on the chemistry of phosphate fertilizers, and have developed novel products of great potentialities. It may be noted that, at first, they both encountered considerable opposition from mixers of the older grades of compound fertilizers, who did not see why official bodies should enter the fertilizer industry. The attitude raises an important general problem for postwar planning. The world has ample reserves of phosphate rock and vast areas of land need phosphate fertilizer. The technical efficiency of making and using phosphate fertilizers must be improved, and in some way the old suspicions between buyer and seller must be broken down. Research institutes and the National Advisory Service with the good-will and assistance of farmers can test new and old products, and improve their practical use, but something more is wanted. The general planning and coordination of future supplies, so effectively carried out by Ministries of Supply and Agriculture during the war, might be taken over by a central body, somewhat along the lines of the Agricultural Machinery Board, with adequate resources and staff for developing new forms of fertilizer and undertaking fundamental research.

Fertilizer for Grain Following Soybeans

Professor J. B. R. Dickey, Extension Agronomist, Pennsylvania State College, advising farmers how to sow wheat after soybeans, says, "Soybeans for either hay or seed seem to leave the soil exhausted of available plant food. Grain sown after beans should always be well fertilized." He suggests 300 to 400 pounds per acre of something like a 3-12-6 or 4-12-8 even on fertile soil.

TVA Extensions

In an effort to create 60 million new jobs, it will be surprising if a dozen proposals for duplicating TVA are not forthcoming. Harnessing water power for cheap electricity to provide electric power, heating, lighting and cooking has a strong popular appeal. What will it do to the local, privately owned electric power plant is a matter about which there is likely to be little public concern.

The Government has always controlled navigable streams, and under TVA authority it has controlled streams that are not navigable, supposedly for purposes of flood control.

Developing the water power of navigable streams is considered by many as within the province of the Federal Government, but their approval ends there. Some, of course, want the Government to step in and develop any natural resource that it chooses to develop, but surveys show that most people do not want the Government entering the field of business in competition with private interests.

What the fertilizer manufacturing industry does not want is a duplication of TVA's entry into the manufacture and distribution of fertilizers, not a small amount of which was manufactured and distributed free to farmers—but at the cost of the taxpayers. That, of course, is not healthy competition.

Just why TVA felt that it should get into the fertilizer business is not clear. It was probably an urge to make some use of a Muscle Shoals plant erected during World War I to make nitrates for munitions. The first venture was in making concentrated phosphates. But from that as a starter other forms of fertilizer were put out, and ambitious plans for developments in the Florida phosphate field are proposed.

If new federal developments are confined to producing electricity to be distributed and sold through private agencies, there will not be so much complaint against Government entry into electric power production.

A phase of Government's extended power development, not often discussed, is the submergence of the best agricultural lands along the streams. In the more mountainous regions it means the depopulation of the areas. In others, it means transfer of farm families to poorer uplands where erosion has taken away most of the top soil. Of necessity agriculture has become only a vestige of what it was along the rivers' rich alluvial bottom lands.

To keep the water basins, made by the

dams, from filling up and decreasing water power, the tendency is to put watersheds into forests, which, of course, further decreases areas devoted to farming. Industry, and not agriculture, has been the chief beneficiary of Government water power development. In fact, along the Tennessee River, agriculture on the best farmlands has been literally submerged and obliterated. This phase of power-plant developments should be weighed along with other factors in reaching decisions to harness more rivers.

Davison Annual Report

The Annual Report of the Davison Chemical Corporation for the fiscal year ended June 30, 1945, shows sales for the year of \$33,398,631, an increase of 31 per cent, compared with \$25,448,392 during the previous year. After provision for income and excess profits taxes, net profits amounted to \$1,471,390, a relatively small increase over the 1943-44 profits of \$1,380,724. Federal income and excess profits taxes increased from \$1,119,907 in 1943-44 to \$2,317,500 in 1944-45.

President Chester F. Hockley reports that the Company faces no plant reconversion program since the expansion of business to meet war demands was based on their regular products which are in demand for peacetime uses. He reports no reduction in demand for their industrial and agricultural chemicals and manufacturing facilities will operate at capacity for the coming year.

The management is developing a program for the modernization of plants and the building of new plants, which will be put into effect as rapidly as the adjustment from war to peace conditions can be made.

California Fertilizer Association To Meet November 8, 9 and 10

The twenty-second Annual Convention of the California Fertilizer Association will be held at the St. Francis Hotel, San Francisco, on November 8th, 9th, and 10th. Among the topics scheduled for discussion are the proposed national fertilizer legislation, the allocation of materials, and the place of the industry in the postwar era. Reservations should be made direct to the hotel management.

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A. A. WARE, Editor
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REPRESENTATIVES
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American Plant Food Council Outlines Program

A declaration of policy and program based on the premise that, with the lifting of wartime restrictions and controls, the fertilizer industry can now meet expanding needs for fertilizers and that it is the fundamental obligation of the industry "to supply the right kinds and amounts of fertilizers to farmers of the United States at the lowest price consistent with efficient management and reasonable profits," was adopted by the board of directors of the American Plant Food Council, meeting September 26th in its headquarters in the National Grange Building, Washington, D. C.

Reporting the board's action, Harry E. Caldwell, secretary, said that it is not only the plan of the council to foster a program for economical production and distribution of fertilizers, but also actively to support agricultural plans calling for approved land-use practices with maximum benefits from efficient use of plant foods. He added that, with the lifting of controls and the return to normal distribution and manufacture, it is reasonable to presume that the fertilizer industry will operate even more efficiently than it did during the war.

Soil Management Basic

In its declaration of policy and program, the plant food council recognizes that a stable and efficient agriculture must be based on soil maintenance and improvement and its advocacy of the various practices that make for efficient soil management. It proposes to encourage the production and distribution of an abundant supply of plant food for agricultural needs through private industry and by ascertaining needs from State and Federal agricultural agencies and possible demand, and supplying this information to all branches of the industry, and by maintaining free access to sources of plant food materials, without discrimination as to prices and other factors, for all branches of private industry.

It will encourage efficient utilization and conservation of mineral plant food resources by encouraging the exploration and evaluation of phosphate, potash, and other deposits, cooperating with Federal and State agencies in periodic reviews of plant food resources and demand, encouraging research to assure non-wasteful mining and efficient processes, and continuing the traditional American policy of duty-free imports of all fertilizer

materials. It will encourage development and use of improved methods in producing, blending and distributing fertilizers by supporting a research program by both private industry and government; encourage standardization of grades; encourage further elimination of unnecessary practices which tend to raise plant food costs.

Research and Education

The council also pledged its efforts to encourage and support agricultural research, educational, and control agencies by lending all possible aid to public agencies in the collection and dissemination of statistics relating to plant food production and consumption, development of uniform State fertilizer-control laws and observing compliance with these laws by industry. It also plans to cooperate with farmers and their organizations in developing policies designed to place agriculture on a satisfactory, self-sustaining basis by recognizing the importance of soil management practices and the need for changes in the systems of farming in some regions.

Finally it will urge fertilizer manufacturers, dealers, and agents fully to understand and support recommendations for crops, soil management practices, and fertilizer use as developed in the recognized findings of scientific research. This will be done by keeping the industry informed of official fertilizer recommendations and results of research, by promoting education programs in the proper use of fertilizers, and inviting frequent conferences with college and government agronomists and control officials.

Ceiling Price Set on New Idaho Superphosphate Output

The Office of Price Administration has established a producer's ceiling price per unit of phosphoric acid for run-of-pile pulverized superphosphate loaded at Pocatello, Idaho, a new producing point.

Effective October 6th, the new price is 82 cents, covering sales to fertilizer manufacturers, f. o. b. cars at Pocatello. The cost of finished fertilizer to the farmer will not be affected.

The new ceiling takes into consideration the lower average freight costs on phosphate rock and sulphuric acid at Pocatello, Idaho, than at Stege, Calif. A ceiling of 84 cents per unit of phosphoric acid applies at Stege, which is the nearest competitive producing point, OPA said.

N. F. A. Fall Convention To Be Held

The Board of Directors of the National Fertilizer Association has announced a fall meeting of the members of the Association, to be held at the Biltmore Hotel, Atlanta, Ga., on Tuesday, November 13th and Wednesday, November 14th. The Board of Directors will meet on November 12th. Details of the program for the general meetings will be announced later. This convention, which has been omitted during the past few years, has been made possible by the lifting of convention restrictions by the Office of Defense Transportation.

Hotel reservations should be made direct to the Hotel Biltmore, Atlanta.

Dawes Succeeds Perry in V.-C. Organization

At the annual meeting of the stockholders of Virginia-Carolina Chemical Corporation held in Richmond, September 28th, all members of the Board of Directors were re-elected for another year. The remainder of the meeting was devoted to routine matters and a review by the President of the business of the Corporation for the last fiscal year and the outlook for the current fiscal year. At an organization meeting of the newly elected Board, officers of the Corporation were re-elected for another year, and Irving D. Dawes, of Richmond, was elected Vice-President and Treasurer. As Treasurer, Mr. Dawes succeeds H. E. Perry, who had been in the employ of the Corporation and its predecessor for 33 years and who, upon his request, was retired by the Board of Directors.

Mr. Dawes is a native of Somerville, Mass., and a graduate of Harvard College and Harvard Graduate School of Business Administration. He became affiliated with Virginia-Carolina Chemical Corporation in 1930 as its chief accounting officer. In addition to his training and experience in economics, banking, corporate finance and accounting, he has participated in and directed many of the Corporation's other activities, particularly its textile bag business, in which field he had broad experience before coming with Virginia-Carolina Chemical Corporation. He is also officer and director of several of Virginia-Carolina Chemical Corporation's subsidiary and affiliated interests.

Pasture Notes

Compiled by R. H. LUSH

Pasture Specialist, The American Fertilizer Association

Alabama

Fertilize Grazing Crops Liberally

For maximum grazing the Alabama Extension Service suggests fertilizing crimson clover and ryegrass in one of the following ways: 500 to 700 pounds of 4-10-7 or 0-14-10; 400 to 600 pounds superphosphate and 50 to 100 pounds of muriate of potash; or in place of superphosphate, 600 to 1,000 pounds basic slag. In all cases top-dress with nitrogen as soon as plants are up.

Florida

More Pasture

According to the AAA report for 1944, at least 12,329 farmers in Florida received payments for the application of phosphate to pasture lands and cover crops, 752 farmers for establishing and reseeding pastures, 1,534 for renovating pastures, 7,033 for grazing a cover of small grains, and 83 for establishing surface control on pastures by constructing shallow ditches, with a total of 33,742 Florida farmers participating in the program.

Georgia

Heavy Fertilization Profitable

An average of seven years' results at the Georgia Experiment Station shows the cost per ton of dry matter to be \$10.49, when as much as 128 pounds of nitrogen, 192 pounds of phosphoric acid, and 100 pounds of potash were applied to permanent pasture. Even with this heavy treatment, on a watered series, Ladino clover almost completely subdued Bermuda grass throughout the summer. Where nitrogen was used without phosphate or potash, clovers were reduced. Lesser rates of complete fertilizer gave smaller increases but produced dry matter at slightly less cost per ton. All increases were at less cost than comparable amounts of feed purchased as hay or cottonseed meal, reports Dr. O. E. Sell.

Indiana

Research Results from Upland

Among results presented by Dr. G. O. Aott, research agronomist, at the recent field

day at Upland were tests with steers grazed on fertilized pasture land which resulted in more beef produced per acre and more gains per day per steer than steers of the same lot grazed on unfertilized pasture land; rotation grazing did not show consistent advantages over continuous grazing on either fertilized or unfertilized pastures; mowing pasture showed little advantage in beef production but aided in weed control; gains per steer on bluegrass pasture were equal to or greater than those produced by rotation pasture mixtures, but less beef per acre because two-thirds of the gains came in the first one-third of the grazing season; and gains on birdsfoot trefoil-bluegrass were more evenly distributed throughout the season than with ordinary bluegrass and some of the other grass-legume mixtures, such as Ladino and brome or timothy grass.

Iowa

More Beef from Improved Pasture

Native steers on an alfalfa-brome grass pasture limed and treated with 300 pounds phosphate per acre gained 4.06 pounds per day during a 28-day period ending June 14th, in a Monroe County, Iowa, pasture improvement test, reports M. L. Peterson, extension agronomist. Other pasture tests indicate that light disking of bluegrass pasture increased the yield of grass to 2.13 tons; medium disking to 2.45 tons; heavy disking to 2.86 tons per acre. Another Iowa five-year test showed that bluegrass pastures grazed heavily early and late had 34.1 per cent weeds, while pastures grazed moderately during the entire season contained only 7.5 per cent weeds.—Wallace's *Farmer and Iowa Homestead*, July 21, 1945.

Kansas

Alfalfa Saves Grain

Pigs fed a limited grain ration on alfalfa pasture for 104 days and then full fed required 33 more days to finish to the same weight than pigs fed grain continuously, but required only 68 per cent as much grain per 100 pounds of gain. Feeding alfalfa hay in a

rack was just as satisfactory as including alfalfa meal in the usual protein supplementary mixture.—*Kansas Farmer*, June 1, 1945.

Kentucky

Fertilize Snail Grains Well

"More wheat, oats, barley and Balbo rye are needed, but it is no use to sow barley on anything but good land—and not much use to sow wheat or oats on poor land. Try to get good land and in any case, fertilize well. Now while labor is scarce it will pay to use fertilizer more heavily on all crops than ever before. In fact, with fertilizer so much cheaper than labor, it will probably never again be wise for Southern farmers to use as little fertilizer as they did before the present war."—*Progressive Farmer* (Kentucky-Tennessee-West Virginia edition), August, 1945.

Louisiana

Use Fertilizer as Well as Lime

Lime and fertilizer recommendations have been made for more than 2,000 improved pastures and it has been seldom found that lime was needed where phosphorus or potassium or both of these elements were not needed. Total soil needs in Louisiana are for four times as much phosphorus, 11 times as much potash, and twice as much lime as were applied in 1944.—*The Progressive Farmer*, May, 1945.

Mississippi

Most Important Practice

Pasture improvement is probably the most neglected opportunity of the South. "Fertilization is the most important pasture practice." Try lime and phosphate on a few acres to convince yourself of the great possibilities.—*Miss. State College News Letter*.

Missouri

Soil Fertility and Farm Security

An analysis of some 500 farm records from the Farm Security Administration in southwest Missouri for 1944 shows that the lowest income group had an average gross earning per farm of approximately \$1,700 after spending only 4 per cent of the farm expenditures for limestone, fertilizer, and seed, and 33 per cent for feed. The middle income group averaged \$3,000 gross income per farm, spent 6 per cent for limestone, fertilizers, and seed, and reduced their expenditures for feed to only 24 per cent. The highest income group used 8 per cent of their expenses for limestone, fertilizers, and seed, and reduced their feed expenses to 18 per cent of farm expenditures. In other words, the highest group

spent 4 per cent more for materials to produce feed, but had 30 per cent more net income for raising the standard of living, points out L. Wm. A. Albrecht, University of Missouri.

New Hampshire

Grassland Management

Annual top-dressing is the keystone of success in grass farming. Treating each acre every year should be the slogan of those who depend upon grass, states Professor Lora S. Prince. One year's neglect is sufficient to weaken and stunt some of the high-yielding, desirable plants so that the field never recovers its former high yield. Plenty of legumes, early cutting, and proper rotation of pastures are also effective.

New Jersey

Fertilized Pastures Cheapest Feed

New Jersey pastures can be fertilized adequately and otherwise given proper care and still be the most economical source of feed. It is estimated that pastures represent only 5 per cent of total production costs in the State.—*Ext. Release*, July 10, 1945.

North Carolina

Grazing Crops for Cheaper Milk

Dairymen should plan to extend the grazing season from the usual five or six months to at least eight or nine months through the use of temporary grazing crops, says John A. Arey, extension dairy specialist. "The secrets of good fall and winter grazing are early seeding on good land, adequate fertilization, and the use of relatively large amounts of seed," states Mr. Arey, in recommending the use of about three bushels of oats, barley, or rye per acre, together with Italian ryegrass and crimson clover with plenty of fertilizer.

Ohio

Prepare for Post-War Production

Building pastures up to a high productive rate and keeping them there means calling in reinforcements in the form of mixed fertilizer to provide necessary nourishment to assure a good stand of grasses. The production of milk on fertilizer herbage was found to be 41 per cent greater than on unfertilized pasture in tests of the Ohio Station. Competition will be keen in post-war years. To meet that problem, lower production costs and higher milk output per cow must be achieved. Pasture improvement should be an important feature of any post-war plan.—*Ohio Farm Bureau News*, July, 1945.

(Continued on page 26)

International To Increase Board of Directors

International Minerals and Chemical Corporation has sent proxies to stockholders asking for the election of Thomas S. Lamont, General Robert E. Wood, and R. Douglas Stuart as directors of the corporation at the annual stockholders' meeting on October 22nd, according to an announcement by Louis Ware, president.

Mr. Lamont, who is a vice-president of J. P. Morgan & Company, Inc., is expected to fill a vacancy which will result from the request of his father, T. W. Lamont, for resignation from International's board. The latter, who is chairman of the board of J. P. Morgan & Company, Inc., has served as director of International Minerals and Chemical Corporation for more than thirty years.

With the election as directors of General Wood, who is chairman of the board of Sears, Roebuck & Company, and Mr. Stuart, who is president of the Quaker Oats Company, both of Chicago, International's board will be increased from seven to nine members.

Moyers Returns to Inter- national Staff

Commander George W. Moyers, U. S. N. (R.), recently discharged, has resumed his duties as Sales Manager of International Minerals and Chemical Corporation's Phosphate Division. Commander Moyers will be in charge of domestic and export sales.

With the corporation since 1927, Moyers took leave of absence to accept his Navy commission in August, 1942. He is an Annapolis graduate. The Commander will make his headquarters at the corporation's general offices, 20 N. Wacker Drive, Chicago.

Davison Starts Engineering Division

Chester F. Hockley, President of The Davison Chemical Corporation, Baltimore, announced a new division of the Corporation—the Engineering Division. This will be headed by E. B. Dunkak, as Manager.

Mr. Dunkak's assistants are: J. C. Albright, Head of the Consulting Engineering Section, whose activities will consist of supplying consulting engineering services; R. S. VanNote, Head of the Equipment Section, whose responsibilities will be to supply industrial process and related equipment; and Kenneth H. VanValkenburg, Head of the Process Engineering Section, whose responsibilities will consist of design, estimating and construction in the field of process engineering.

Fertility Factors in Alabama

The value of the several fertility factors in increasing crop yields is very well illustrated by experiments conducted at the Alabama Experiment Station. When no commercial fertilizer was applied, sweet corn was a complete failure, but when fertilizer was applied a crop worth \$153 was produced. Fertilizer and one inch of water produced a crop worth \$253, while manure with the fertilizer was worth \$439.50. Vetch grown and turned under added to fertilizer, and manure yielded a crop worth \$669.50. This was also irrigated with one inch of water. In other words, when all soil fertility factors were employed a yield of 13,945 lbs. of marketable green corn was produced.

BRADLEY & BAKER

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Jacksonville, Fla.

504 Merchants-Exchange Bldg., St. Louis, Mo.

FERTILIZER MATERIALS MARKET

NEW YORK

Drop in Sulphate of Ammonia Production Continues. No Supplies on the Market. Organic Material Shortage Continues. Improvement Noted in Superphosphate Production. Potash Situation Satisfactory.

Exclusive Correspondence to "The American Fertilizer"

NEW YORK, October 4, 1945.

Sulphate of Ammonia

Production of sulphate of ammonia is now running at the rate of about 53,000 tons per month which is about 20 per cent below the average maintained during the war years. Fertilizer manufacturers are taking under contract all that can be produced and those who are not covered are having difficulty in finding additional sources of supply. Some contract shipments are behind schedule.

Nitrate of Soda

There has been little change in the nitrate of soda situation. Adequate supplies are on hand to fill all current orders. September prices on domestic material have been continued throughout October.

Organic Materials

No improvement has been noted in the supply of animal and vegetable organic materials. The expected increased meat production has failed to materialize in the way of additional supplies of by-products for both the feed and fertilizer trade. Larger imports of castor beans are reported but all castor pomace available is being taken on previous contracts.

Phosphate Rock

Shipments of rock to acidulators continue at top levels. Supplies are adequate and there has been no difficulty with transportation. Export inquiries continue to increase but shipments are limited by the supplies available after domestic requirements are filled.

Superphosphate

The labor situation has improved in some sections and the outlook for increased production is more hopeful. The demand continues strong and contract shipments are going steadily forward. There has been a notable increase in the middle west and north sections.

Potash

The situation in the potash market continues satisfactory. In spite of labor shortage, production has been kept at peak and contract shipments are taking all of the current output until next spring.

CHARLESTON

Organics and Sulphate of Ammonia Still in Short Supply. Active Demand for Phosphate Rock and Potash Continues.

Exclusive Correspondence to "The American Fertilizer"

CHARLESTON, OCTOBER 1, 1945.

Organics.—The short situation on these has not improved and there is a general demand for organics which cannot be filled at present.

Sulphate of Ammonia.—Production of this material still declines and it now appears possible that the supply for the season will be 100,000 tons under last season.

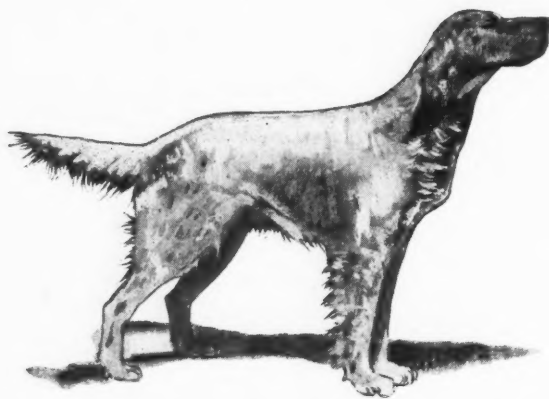
Castor Pomace.—Quite a quantity of castor beans have arrived but the producers are still shipping only on old contracts.

Phosphate Rock.—Buyers are quickly making contracts for 1946 and some producers are so closely sold up that they cannot take on additional business.

Potash.—American production apparently is completely sold up until March and there is an insistent demand for additional sulphate of potash, which is not obtainable.

Fertilizer Order No. 5 Revoked

The U. S. Department of Agriculture has revoked WFO Order No. 5, effective September 30th. This order restricted the sales of fertilizers to certain specified grades in each State. Grade restrictions will still continue in certain States which have had State regulations on this matter prior to the issuing of WFO 5.



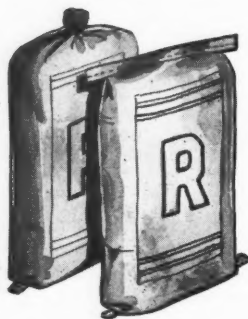
One Will Always Stand Out in Any Field

... the Champion—whether it's dogs, airplanes, fertilizers, or shipping containers. They have that extra something that keeps them ahead of the pack.

In the case of shipping containers, the producers, packers, and shippers of fertilizer affirm that Raymond Multi-Wall Paper Shipping Sacks lead the field.

Manufactured of specially prepared heavy Kraft paper, uniform in size and construction; made in practically any size, type, and strength; printed or plain; dust-proof, sift-proof, water-resistant, Raymond Shipping Sacks have every quality that keeps them champions in their field.

THE RAYMOND BAG COMPANY, Middletown, Ohio



RAYMOND MULTI-WALL PAPER SHIPPING SACKS

Personal Mention

J. E. Nunnally, who was formerly with the Chemicals and Fertilizer Branch of the War Food Administration, has joined the staff of the Cotton Producers Association, Atlanta, and has taken over his new duties in the Supply Department.

H. R. Ringler, formerly general manager of the Fekner Fertilizer Company, Seymour, Ind., has resigned to enter the feed business, having purchased the Royal Center elevator. His position in the Euhner organization has been taken by *R. A. La Croix*, formerly sales manager of the Company.

Henry L. Taylor, Sr., has resigned as chief of the Nitrogen Unit, War Production Board, and has accepted a position with the Barrett Division, Allied Chemical and Dye Corporation.

J. R. Nunnally has resigned as president of Monroe Chemical Fertilizer Company, Monroe, La., and has been succeeded by *J. T. Preston*, formerly secretary and treasurer of the Company. Mr. Nunnally will continue to serve as chairman of the Board.

I. G. Porter is now chief of the Fertilizer Division, Materials and Equipment Branch of the U. S. Department of Agriculture, under the new organization plan of that department. *L. B. Taylor* is acting director of the Materials and Equipment Branch.

James N. Reed has been appointed vice-president in charge of sales by the Puritan Mills, Inc., manufacturers of mixed feeds and fertilizers. Mr. Reed was formerly commodity specialist in the Atlanta regional office of CPA.

Prof. F. B. Morrison, head of the Animal Husbandry Department of Cornell University since 1927, retired on October 1st. A noted authority on animal nutrition, he will devote his full time to research and the development of new publications in livestock production. He is succeeded as head of the department by *Dr. K. L. Turk*, who was Professor of Dairy Husbandry at the University of Maryland from 1938 to 1944, when he was recalled to Cornell.

Exports of Ammonium Nitrate

The War Production Board has reported that the 5,000 tons of ammonium nitrate from TVA production, which had been allotted for shipment to France during August, was not exported because the buyers could not arrange finances. Prospects for September were that this same amount would be shipped to France during the month, leaving 7,000 tons for distribution in the domestic market.

Oranage plants expect to produce about 15,000 tons of ammonium nitrate during the month of September, 11,000 tons of which will be moved to France and the Netherlands, the remainder to be distributed to American users.

In a recent release by the Chemicals Bureau of WPB, the fertilizer industry is reported to have increased its sales from \$162,000,000 in 1939 to \$300,000,000 in 1944. During the same period, cash receipts from farm marketing increased from 7.9 billion dollars in 1939 to 19.8 billion dollars in 1944. Most of this increase reflects increased crop production, particularly wheat, according to WPB.

Manufacturers' Sales Agents for **DOMESTIC**

Sulphate of Ammonia

Ammonia Liquor

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Anhydrous Ammonia

HYDROCARBON PRODUCTS CO., INC.

500 Fifth Avenue, New York

CHICAGO

Demand for Fertilizer Organics Continues with Little Encouragement from Producers. Feed Market Still Tight.

Exclusive Correspondence to "The American Fertilizer"

CHICAGO, October 1, 1945.

Lack of organic offerings still make for a quiet market. Inquiries are coming in for material, especially for later deliveries, but so far producers have not given any encouragement to prospective buyers.

All feed materials are unchanged at ceiling prices. Demand is strong, while production lags behind.

Ceiling prices are:

High grade ground fertilizer tankage, \$3.85 to \$4.00 (\$4.68 to \$4.86 per unit N) and 10 cents; standard grades crushed feeding tankage, \$5.53 per unit ammonia (\$6.72 per unit N); blood, \$5.53 (\$6.72 per unit N); cry rendered tankage, \$1.25 per unit of protein, f. o. b. producing points.

Price Ceiling Set on Imported Tankage

Importers of process tankage may sell to manufacturers of mixed fertilizers at a maximum price above that for the same material produced domestically, the Office of Price Administration announced on October 1st.

Two alternate methods of setting a ceiling for limited sales to manufacturers are now open to the use of the importer. They are:

1. The importer may sell at a price that would result in a delivered price no higher than the ceiling for equivalent domestic material delivered to final destination.

2. He may apply to the national office of OPA to set ceilings on the imported process tankage above the domestically produced material, if the manufacturer guarantees he

will not request an increase in the retail price of the mixed fertilizer in which the imported material is used.

This action, effective October 6, 1945, is taken at the request of fertilizer manufacturers, who reported a domestic shortage of organic nitrogenous fertilizer materials, especially in the southeastern section of the country.

Domestically produced tankage is already covered by producing point ceilings. Until now, imported tankage has not been specifically priced by regulation, OPA said. The new amendment applies to each lot of process tankage as it is imported for the manufacturer's use.

Texas Gulf Sulphur Awarded Fifth Army-Navy "E"

Texas Gulf Sulphur Company has been notified of the award of the Fifth Army-Navy "E" to the production plant at Newgulf and the loading plant at Galveston, thus adding a fourth star to the flag at each plant.

As the world's largest producer of sulphur, the Company has pursued a policy of maintaining large stocks of sulphur at its mines as a safeguard against excessive demands and unforeseen contingencies. Despite the unprecedented requirements of the war industries, calling for shipments in hitherto unheard of quantities, production was carried out on such a scale that after six years of wartime activity, the amount of sulphur in stock at the mines showed but little change.

This policy placed the industry in the unique position of supplying one essential raw material that the Government, instead of placing under priority, actually urged consumers to stock in order to ease future demands on heavily taxed transportation facilities.



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DUST**

**HIGH IN KILLING POWER
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The MGK development of Pyrocide* Dust, which has greatly increased the efficiency of pyrethrum insecticide dusts, is an outstanding contribution to agriculture. MGK Pyrocide Dust permits maximum effectiveness and economy. Non-toxic and non-injurious to humans, it has won high favor from satisfied users.

Laboratory and field research with Multicide* DDT Dusts and Sprays indicates new levels of effectiveness in controlling certain types of insects. While their high efficiency is unquestioned, full possibilities of DDT Dusts and Sprays are still being explored. Multicide DDT Dusts and Sprays are now available.

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D D T
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KILLING POWER MULTIPLIED

McLAUGHLIN GORMLEY KING CO.

MINNEAPOLIS • MINNESOTA

*The names "Pyrocide" and "Multicide" are trademarks registered in the United States Patent Office

Moroccan Phosphate Rock

The production of phosphate rock in French Morocco during the last quarter of 1944 totaled 394,000 metric tons, according to a report issued by the U. S. Bureau of Mines. During the first three months of 1945, production increased to 483,400 tons. During 1944, exports of rock amounted to 1,371,300 tons which is about the total quantity produced as very little rock is used locally in the production of superphosphate.

One of the principal difficulties encountered has been the limited capacity of the railroads to haul the phosphates from the principal mines at Khouribga to the port of Casablanca and from the secondary mines at Louis Centil to the port of Safi. The depreciation of railway rolling stock, especially locomotives, owing to the difficulty of obtaining repair parts, and subsequently the heavy demands made upon the railroads by military operations, has left them in such a condition that many delays occurred, as well as a few complete breakdowns, in phosphate haulage during 1944. The shortages of coal and electric power also hampered the phosphate program, not only in their effect upon the railways but also directly at the mines and drying plants.

A goal of 2,500,000 tons has been set for 1945 but the prospects of meeting this objective are not bright.

Louisiana Soil Specialists Estimate Fertilizer Needs

From the Annual Report of the Louisiana Experiment Station, farmers of that State are falling short of meeting plant-food needs. The Report states:

"Considerable progress is being made toward supplying the needs of some of the elements found to be deficient in many areas of the State, but little progress has been made toward supplying the needs of others. It is estimated that 250,000 tons of superphosphate, 80,000 tons of muriate of potash, and 500,000 tons of ground limestone should be added annually to the soils of Louisiana. During the past year about 260,000 tons of liming materials were used, but the equivalent of only about 90,000 tons of superphosphate and 22,000 tons of muriate of potash was used, which is only a small percentage of

the phosphorus and potassium needed. Unless these materials are used as needed, too little benefit will be derived from the use of the lime in most instances. Lime and fertilizer recommendations have been made by the Soils Laboratory for more than 2,000 improved pastures, and it has been seldom found that lime was needed where phosphorus or potassium, or both of these elements, was not needed. In addition to the use of these materials, it is essential to prepare a good seed bed, apply the lime and fertilizers in different operations to depths of 1 to 3 inches, and seed the pasture with a good mixture if maximum returns are to be expected.

North Carolina Sales Break Record

Fertilizer sales in North Carolina for the fiscal year ending June 30, 1945, totaled 1,466,277 tons, according to figures released by Assistant Commissioner of Agriculture D. S. Coltrane. This is the largest tonnage ever sold in any one State in any one year. It is 5 per cent above the record sales of the previous year which amounted to 1,393,687 tons.



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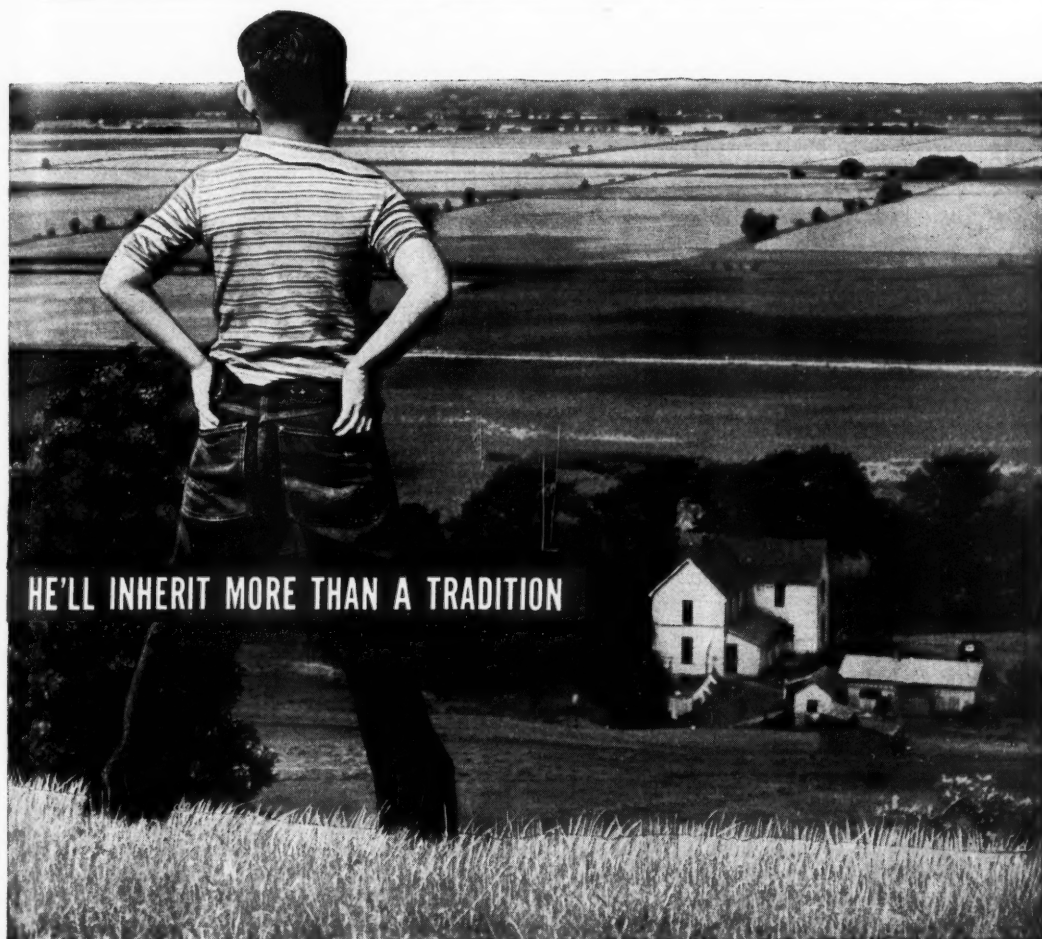
The greater need for peacetime crops requires speed-up in fertilizer production. "Jay Bee" grinds any material going into commercial fertilizers—fast, cool and uniform. Heavy all steel construction makes the "Jay Bee" Hammer Mill practically indestructible. Greatest capacity for H.P. used. Sizes and styles to meet every grinding requirement: 12 H.P. to 200 H.P. with belt, V-belt, and direct connected drives.

Write for complete details, prices, etc.
State your grinding requirement, please.

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**HIGRADE
MURIATE OF POTASH**
62/63% K_2O
**GRANULAR
MURIATE OF POTASH**
48/52% K_2O
MANURE SALTS
22/26% K_2O



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This lad is heir to the land, and more besides. He will inherit his father's capacity for hard work and his devotion to the soil. He will profit by the experience of the many farmers who have gone before him. And he will learn the latest, most practical methods to increase crop yields.

The most practical way of increasing crop yields is through the

use of your fertilizers—most of them compounded with potash, the soil nutrient which provides increased soil fertility and greater resistance to disease and drought.

Sunshine State Potash has helped farmers produce above-average crops, season after season. This has been true for many years past . . . it will continue to be true in the years to come.

UNITED STATES POTASH COMPANY

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Potash Production in Spain

The output of the Spanish potash mines increased in 1944 to 116,000 metric tons of K_2O , compared with 87,000 tons in 1943, and 117,000 tons in 1941, as quoted in a recent report contained in *Mineral Notes*, published by the U. S. Bureau of Mines. Of the total production, about 35,000 tons were used in Spanish agriculture, most of the balance being exported to Great Britain, which took 75,000 tons.

Output in 1945 is scheduled at about 140,000 metric tons of K_2O , but the operating rate was retarded somewhat in the first quarter of the year owing to scarcity of coal, which, because of the electric-power shortage, has been requisitioned largely by the Spanish government for delivery to the electric steam plants for the generation of current. By April the situation had improved, and the companies expected to maintain output at the higher schedule for the remainder of the year. As a result of plant improvements and increased exploitation of mines, the theoretical producing capacity of the three companies has been expanded to about 180,000 tons of K_2O , compared with 150,000 tons in 1944.

July Sulphur Production

Activity in the sulphur industry was at peak rates in July, 1945, according to reports of producers to the Bureau of Mines, United States Department of the Interior. More sulphur was shipped from the mines than in any previous month, and sales were at record levels. Production was also very high but was unable to keep pace with consumption, and stocks declined 78,381 long tons.

Production, mine shipments, and producers' stocks of native sulphur in the United States in long tons:

Period	Production	Mine Shipments	Producers' Stocks
June, 1945.....	309,570	416,272	3,776,738
July, 1945.....	313,391	457,970	3,698,357
June, 1944.....	380,545	311,199	4,168,394
July, 1944.....	305,064	291,890	4,154,349

Can Double Meadows Without Buying Land

Ohio farmers can almost double their pasture and hay acreage without buying another foot of land if they follow the method recommended by D. R. Dodd, extension agronomist, Ohio State University, which is to apply nitrogen to pastures and meadows this fall or next spring.

Mr. Dodd measured the results in numerous Ohio tests of nitrogen application in the fall of 1944 or the spring of 1945. On pastures, fall application increased grass production an average of 78 per cent and spring applications boosted yields an average of 80 per cent.

The nitrogen was applied on pastures in the form of ammonium nitrate at an average rate of 123 pounds in the fall and 115 pounds in the spring. The effect on grass growth was more pronounced in fields where legumes made up less than 50 per cent of the stand of grass but, even with a high percentage of clover, the increase was 68 per cent.

Thirty-seven farmers, who applied an average of 133 pounds of ammonium nitrate

FOR SALE

One used Sturtevant Ring Roll Mill, Style No. 1—Belt driven.

Two used Maxecon Mills—Type No. 5—Belt driven. Mfg. by Kent Mill Company.

Four used American Air Filter Separators, Size No. 9— $\frac{1}{8}$ " steel shells with 6" channel iron and 6" I beam braces and frame. Mfg. by Kent Mill Company.

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NITROGEN!

The society column reported it as an organdy gown.

But that organdy got its start on a cotton field in Dixie. It was good cotton, the better for being nourished by the right fertilizer.

An excellent source of nitrogen for cotton fertilizer or any other fertilizer is Urea-Ammonia Liquor. In the first place, UAL is an economical source of nitrogen for the manufacturer; and it enables him to formulate quick-curing mixtures which store well and drill well.

UAL supplies urea nitrogen which is completely available to the growing crop, but it resists leaching and therefore is available over a long period.

To meet the varying requirements of fertilizer manufacturers, Du Pont supplies four Urea-Ammonia Liquors and "Uramon" Fertilizer Compound. Let us give you more information about them. E. I. du Pont de Nemours & Co. (Inc.), Ammonia Department, Wilmington 98, Delaware.

DU PONT
UREA-AMMONIA
LIQUORS
URAMON*

FERTILIZER COMPOUND



BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

REG. U. S. PAT. OFF.

on meadows, got an average increase of 1,700 pounds of hay per acre. All applications made a difference of 1,500 pounds of hay per acre and spring applications increased yield an average of 1,790 pounds of hay per acre.

The average date of fall applications was October 22nd and the nitrogen was placed on the fields in spring as early as possible. Mr. Dodd says the season of application is not as important as to decide to apply the nitrogen one time or the other, because a substantial profit is assured from either application.

—Ohio Extension Service.

Complete Fertilizers Hasten Cotton Maturity

Complete fertilizers consistently shorten the period between blooming of cotton and opening of bolls, by six to eight days, according to results obtained by the Louisiana Experiment Station, and announced in the Annual Report.

The study embraced the effect of fertilizers on cotton blooming rate, percentage of boll set, percentage of five-lock bolls, and prevention of diseased and worthless bolls.

The land used was poor, being especially low in phosphorus. With the exception of phosphoric acid, the application of a single element fertilizer failed to give any increase in the number of blooms, percentage of bolls set, or percentage of five-lock bolls, the report states. But complete fertilizers gave very consistent increases. The grade of complete fertilizer used was 5-10-4, applied at the rate of 1,000 pounds per acre. The complete fertilizer markedly increased the percentage of bolls set and the number of five-lock bolls, while lowering the percentage of diseased and worthless bolls. Results in 1943 and 1944 were well in line, the report states.

PASTURE NOTES

(Continued from page 15)

Oklahoma

Fertilized Grain Crops Preferred

In trials where dairy cows had free access to plots, those plots fertilized with 150 pounds of superphosphate per acre were preferred regardless of the crop grown. A total of 167 hours was spent on the fertilized and 110 hours on the unfertilized plots. In the fall cows preferred oats first, then rye, and finally barley. In the spring they preferred wheat and then rye. Ryegrass was not very palatable, possibly because of the lack of fertility.—Okla. Mimeo. Circ. M-142, May, 1945.

Pennsylvania

Rotation Pastures

Results obtained over a three year period at the Dairy Experiment Farm, Montrose, show 51 per cent more production before July 15th and even more important, 113 per cent more after July 15th, for a crop rotation pasture system than for improved permanent pastures. Both kinds of pasture were limed and fertilized at approximately the same rate. While the rotation pasture was started with a grass-legume mixture in oats, by the third and fourth years Lucino clover and orchard grass predominated.—Science for the Farmer, December, 1944.

Rhode Island

Pasture Renovation

In making suggestions for increasing the productivity of large areas of heavy sod, rocky or wet land pasture, Dr. Irene H. Stuckey says, "Rhode Island soils are generally deficient both in phosphate and potash, and in most cases an application of 800 pounds of 0-20-20 or equivalent per acre is advisable. The fertilizer should be disked in thoroughly

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Fertilizer
add **ES-MIN-EL**

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ATLANTA, GEORGIA

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FERTILIZER PLANT
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Dependable for more than 50 Years

All-Steel	Pan Mixers—	Vibrating
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Dry Batching	Pulverizers	Scales

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AURORA, INDIANA, U. S. A. Founded 1924

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Multiwall Paper Shipping
Sack Customer!*

For years, manufacturers have said, "It pays to be a Bemis Multiwall Paper Shipping Sack Customer." Wartime conditions brought this fact home in hundreds of instances. • Perhaps the most important reason is that Bemis made an unusual record in fulfilling shipping promises and in maintaining quality under wartime conditions.

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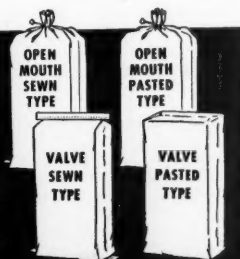
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in late November and plans should be made for top-dressing with 500 to 800 pounds per acre of 0-20-20 annually. Where the land is deficient in nitrogen, enough should be used to establish the new seedlings and to stimulate early spring growth without injuring the legume stand."—*R. I. Exp. Sta. Misc. Pub. 24, 1945.*

South Carolina

Hog Pastures Save Grain

An acre of good hog pasture may save 10 to 30 per cent of the necessary grain and protein feed or 1,000 pounds of grain and 500 pounds of tankage with a replacement value of about \$65 at present prices, states A. L. DuRant, extension livestock specialist. In addition, pastures are an excellent source of vitamin A, promote good bone growth, guard against disease and save labor. The best temporary pastures or forage crops for hogs in South Carolina are soybeans, pearl millet, and lespedeza for summer, and oats, barley, wheat, and rye for winter.

Tennessee

Fertilization Most Important

"There is nothing more important to insure high yields than to use larger amounts of high grade fertilizers. Adequate fertilization results in the crops getting started rapidly and growing out before cold weather comes. It means more pasture per acre and therefore less hand feeding. It means more cover for the land during the winter, thereby reducing soil losses and higher yields at harvest time," advised farm management specialists in urging early preparation of land and seeding of small grain and crimson clover.

Texas

Heavier Initial Treatments

The application of approximately 200 pounds of phosphoric acid per acre in several treatments at Lufkin permitted the establishment of adapted clovers and grasses, increased the yield and quality of pasture to provide good grazing for 280 days, and provided both hay for winter feed and seed for the improvement of other pastures. Pastures showed beneficial effects from phosphate ap-

plications after nine years, but there was some decline in production five years after treatments. Since there is very little loss of phosphate fertilizer from the soil through leaching, apparently the only advantage to applying 100 pounds of P_2O_5 every four years over applying 200 pounds every eight years would be the better distribution of the cost. A heavy initial application in preparing the pasture land gives an opportunity of placing all the fertilizer at a depth of one to two inches.—*Texas Agr. Exp. Sta. Bul. No. 666, 1945.*

Virginia

Fertilize Fall Alfalfa

Alfalfa may be seeded successfully in late August and early September to escape summer weeds, but above all use an abundance of plant food—the equivalent of 800 to 1,000 pounds of 0-12-12 or 2-12-12 fertilizer per acre at seeding. One of the most successful methods has been to plow or disk under one-half of the fertilizer, applying 15 to 20 pounds of borax per acre as well as lime and adapted seed.—*Virginia Extension Release, June 26, 1945.*

Washington

Improve Irrigated Pastures

The best fertilization of an irrigated pasture is top-dressing with barnyard manure in fall and, on farms where there is a definite lack of phosphorus, the use of 100 pounds of concentrated superphosphate per acre. Top-dressing and irrigating correctly may mean 50 per cent



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Agricultural authorities have shown that a lack of Boron in the soil can result in deficiency diseases which seriously impair the yield and quality of crops.

When Boron deficiencies are found, follow the recommendations of local County Agents or State Experiment Stations.

Information and references available on request.

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Pioneer Producers of Muriate of Potash in America
See Page 4



greater yields from old pastures, for nutritive value of the forage is increased, growth is improved and cattle receive more minerals.—*Washington Farmer*, May 1, 1945.

West Virginia
Use More Acre

Studies in Upshur County showed that where applications were heavy enough to increase the lime and phosphorus content of the soil materially, the increases in yield range from 68 to 79 per cent. Farmers estimated that the carrying capacity of these pastures was raised between 80 and 90 per cent. Not only were yields better, but the quality and kind of vegetation changed, too, with increases in production well distributed throughout the pasture season.—*W. Va. Sta. Bul. No. 304*.

Wisconsin
Bigger Grazing Acres

Wisconsin dairy cattle receive about 25 per cent of their feed requirements from pastures. With controlled grazing, proper fertilization, renovation of permanent pastures and more extensive use of drought resistant forages, they could get as much as 40 per cent of their nutrient requirements from grazing. Fertility must be the basis of high pasturage yield as is the case with other crops. Nitrogen

applications have advanced spring grazing 10 days to two weeks in some cases and increased total pasture forage production 50 to 100 per cent. Lime, phosphate, potash and manure may be required in a good pasture program, according to H. L. Augren and C. M. Werner, University of Wisconsin.—*Capper's Farmer*, July, 1945.

South Africa
Nitrogen Important

In experiments over a period of years where 200 pounds of nitrogen per acre were used to improve pastures, 48 per cent of the amount applied in the high nitrogen treatment was recovered in herbage. Even under those conditions of rather limited rainfall, some pastures give a return of 20 to 25 pounds of dry matter per pound of nitrogen applied, reports L. D. Meredith. One pound of nitrogen produced from two to two and a quarter pounds of beef when used in conjunction with phosphate. Even though phosphorus content of herbage was doubled by application in some areas, it is considered that the low protein content rather than phosphorus deficiency is responsible for slow growth and small gains.—Thesis—"Fertilizing Grasses in South Africa." Univ. of Witwatersrand, Johannesburg.

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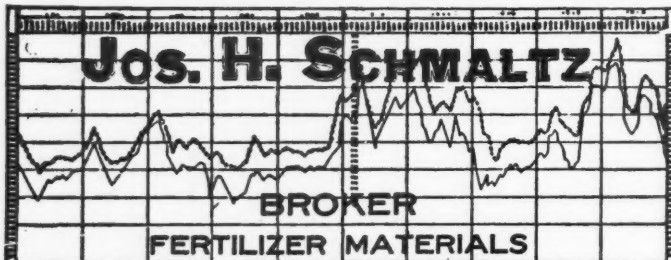
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Montreal, Quebec
Vancouver, British Columbia

Boston, Mass. Birmingham, Ala. Dallas, Texas Denver, Colo. Detroit, Mich. No. Kansas City, Mo.
Los Angeles, Calif. New Orleans, La. Franklin, Va. Seattle, Wash. Nazareth, Pa. Toledo, Ohio

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